

ABSTRACT

An abrasive, fluid jet cutting apparatus, and its method of construction and operation, are disclosed that reduce the wear and erosion problems typically experienced in the cutting jet's mixing tube. This improved fluid jet cutting apparatus comprises (a) a chamber having an inlet for receiving a pressurized fluid jet, a port for receiving a flow of abrasive particles which are entrained into the fluid jet, and an exit through which the fluid jet and entrained abrasives exit the chamber, (b) a mixing tube having an entry port for receiving said fluid jet and entrained abrasives, an inner wall for directing the flow of said fluid jet and entrained abrasives, and an outlet port through which said fluid jet and entrained abrasives exit said tube, wherein the tube entry port is proximate the chamber exit, (c) a lubricating fluid reservoir that surrounds at least a portion of the outer wall of the mixing tube, (d) wherein at least a portion of the mixing tube wall is porous, and (e) wherein the lubricating fluid passes from the lubricating reservoir and through the porous wall to lubricate at least a portion of the surface of the mixing tube wall so as to resist erosion of the tube wall when the fluid jet and entrained abrasives flow through the mixing tube.